

C-130 Avionics Modernization Program



Update for RROC

**Col Robert Speer
AFRC/XPR, OL-S**



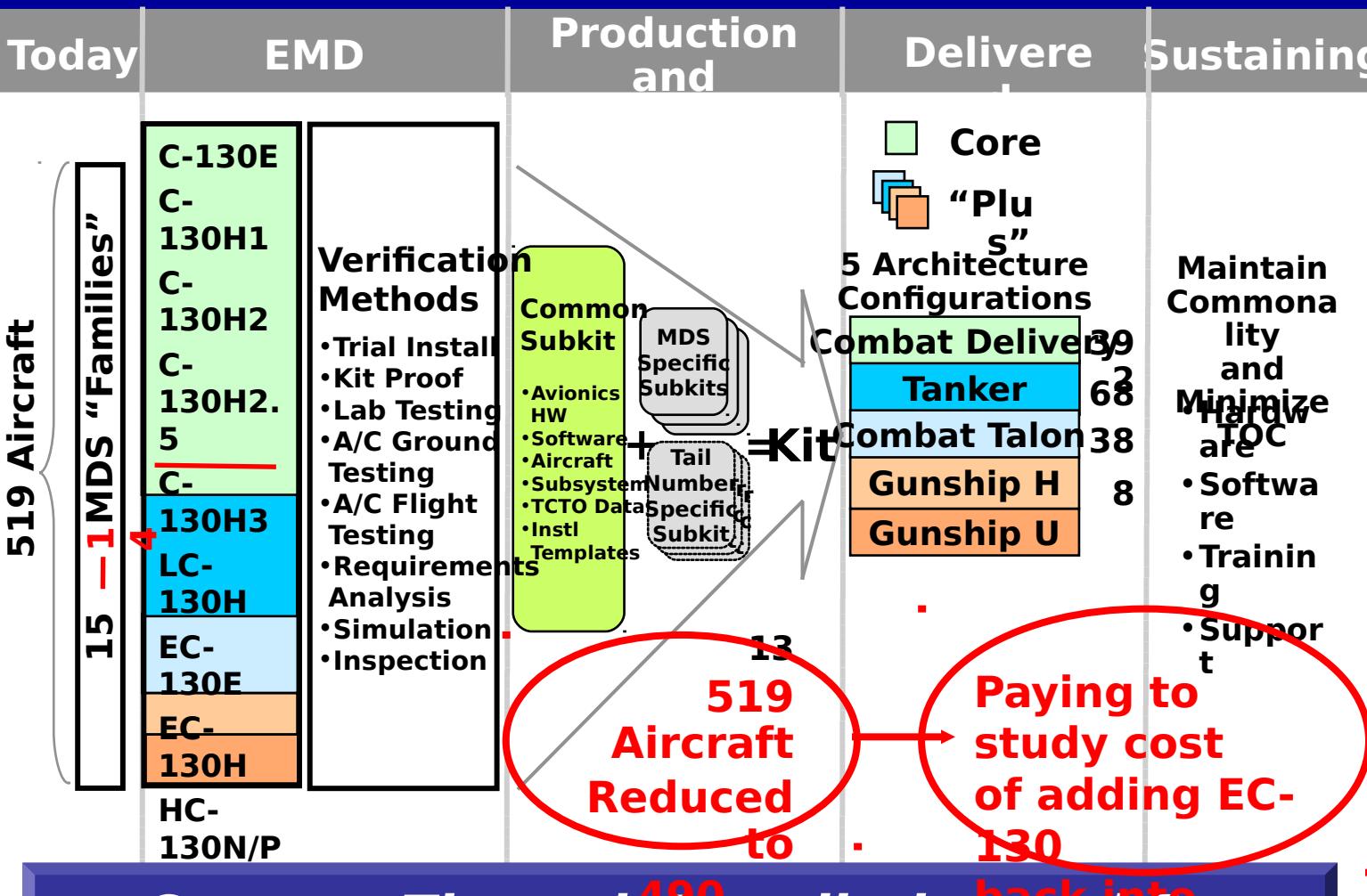
C-130 Avionics Modernization Program Replan Results

- ◆ Reduces FY03/FY04 costs (**\$100M cut in 03 & 04**)
 - Still ~ \$15M disconnect in FY04
- ◆ Funding reduction impacts:
 - Schedule delays (1 year slip to first flight,
~2 year slip to EMD completion)
 - Delay to key design reviews (PDR and CDR)
(Exec CDR not until 7 mos prior to 1st flight)
 - Cost growth
- ◆ Provides more time to develop TF technology
- ◆ Provides more time for software development



Developing Our Product

Program Overview



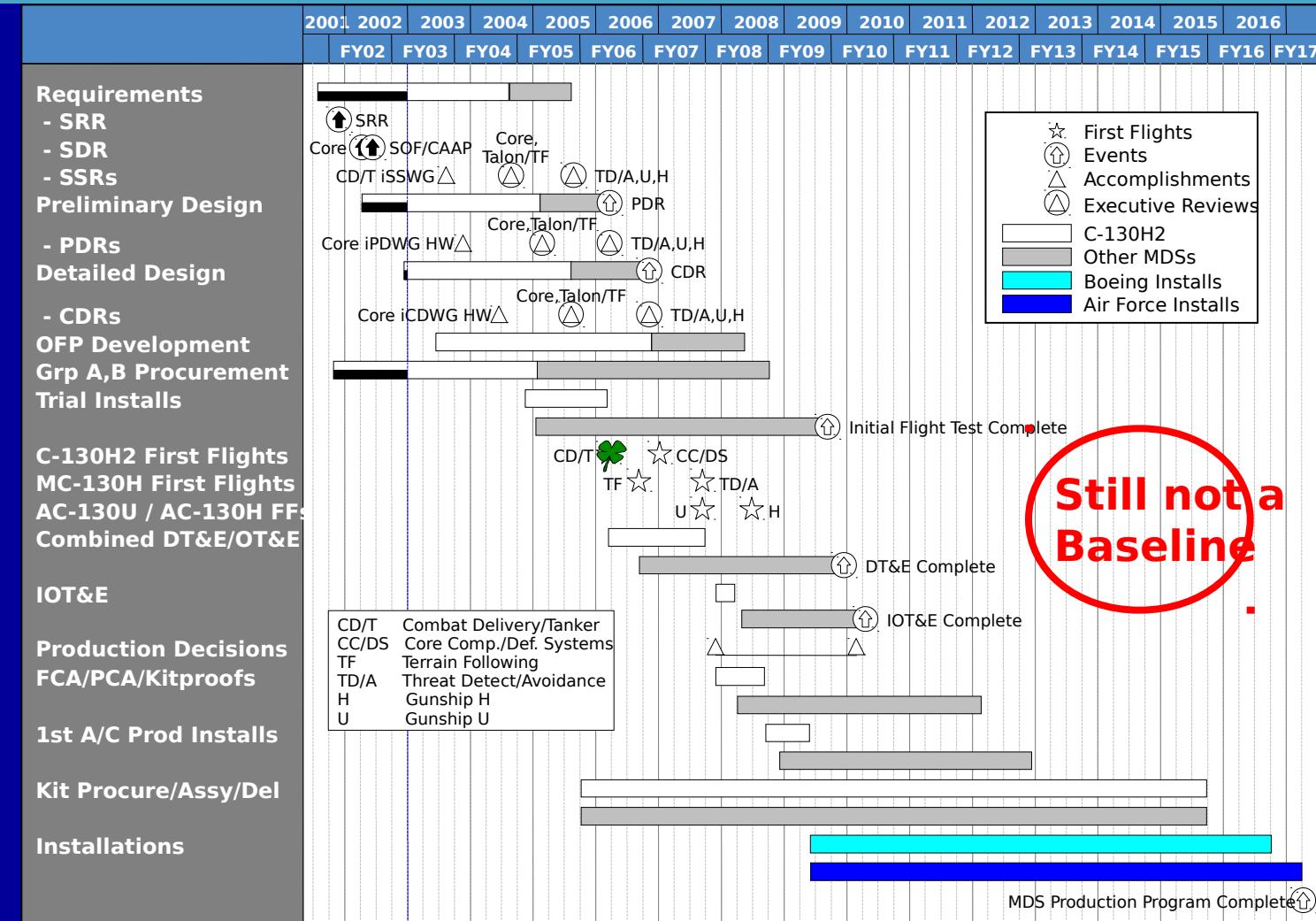
from Concept Through Installation and Support Program

MC-130P
MC-130E



Program Master Schedule

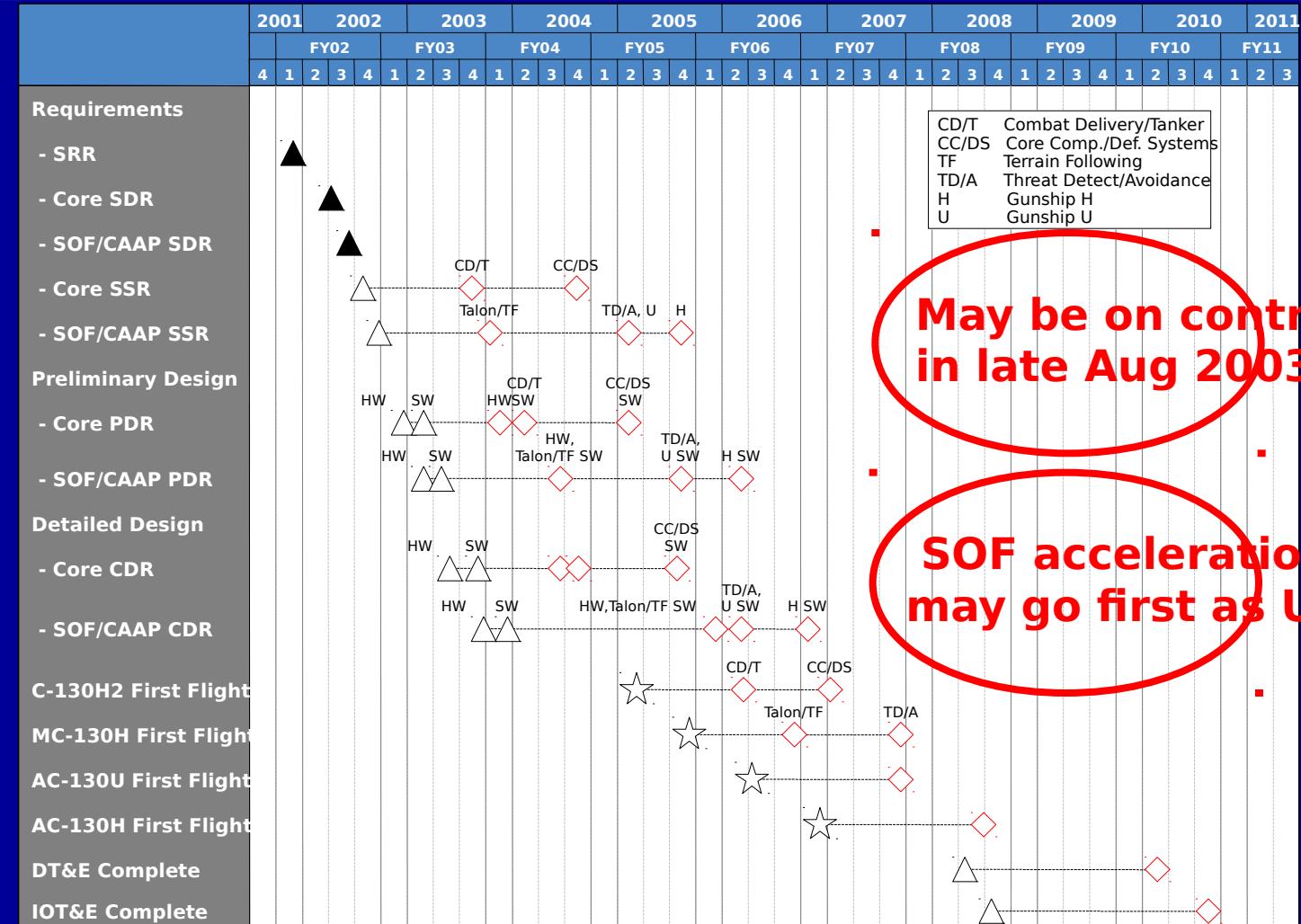
Program Overview





Program Overview

SOF/CAAP Changes - ECP 1302





Background

- ◆ **SOF requires operational AMP/CAAP Talon capability in FY08**
 - Current AMP program schedule does not support capability until 2010
- ◆ **Boeing was requested to study options to accelerate Talon capability**
 - Boeing briefed SPO and AFSOC on study results on January 16, 2003
 - Boeing/USAF team modified the recommended approach to incorporate customer Most Important Requirements



Customer (AFSOC) Most Important Requirements

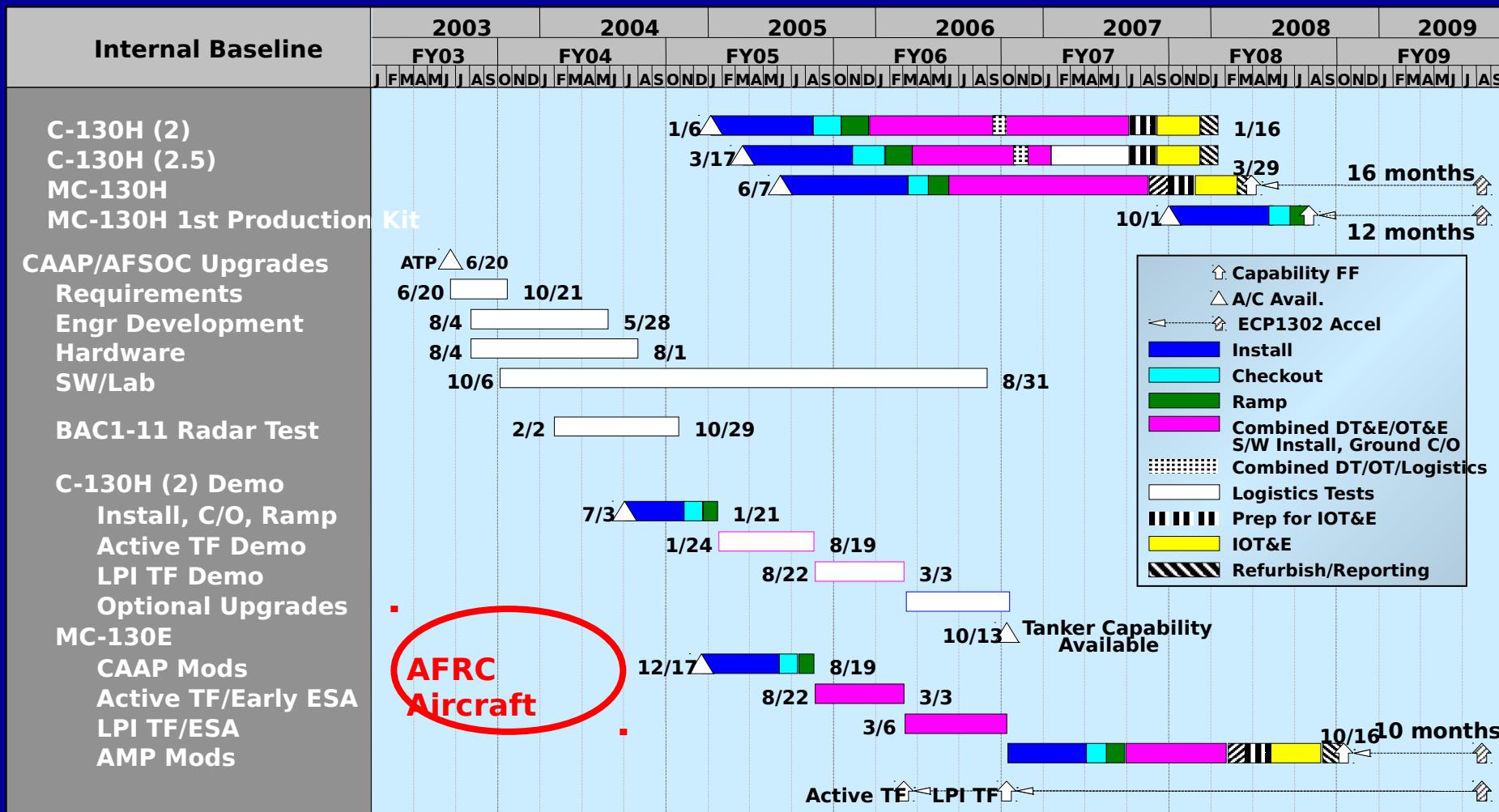
- ◆ **Talon Mission capability early**
 - AMP/CAAP Cockpit
 - LPI/LPD TF/TA
 - ESA
- ◆ **Continue to improve current TF capability to meet current KPP requirement**
 - Safe at 250 ft. (currently at 700 ft.)
- ◆ **Opportunities to convert H2s to Talons sooner**

**AFRC Most
Important??**



C-130 AMP EMD CAAP Acceleration - Option 2A

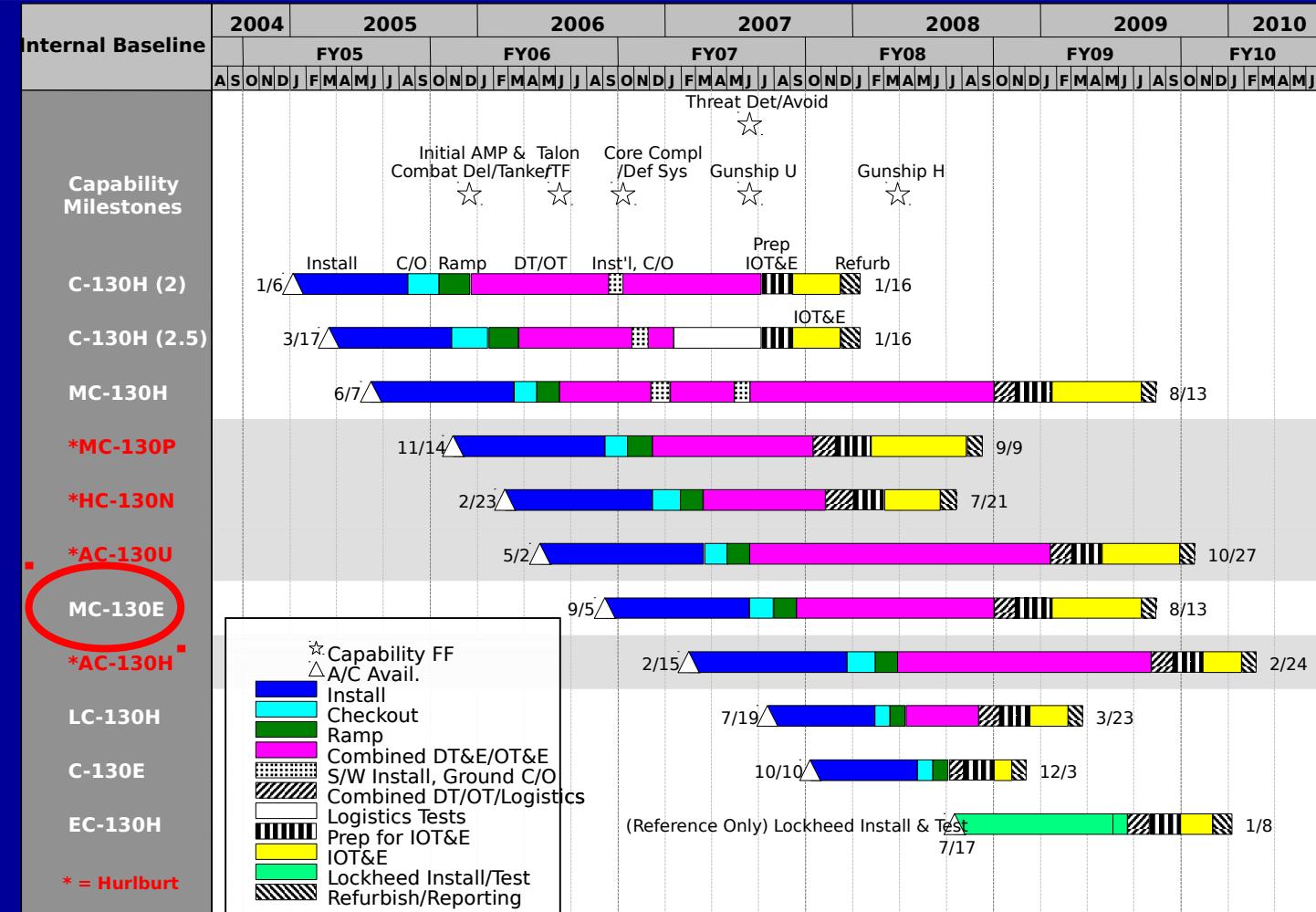
Program Overview





Trial Installs, Test, and Refurbish

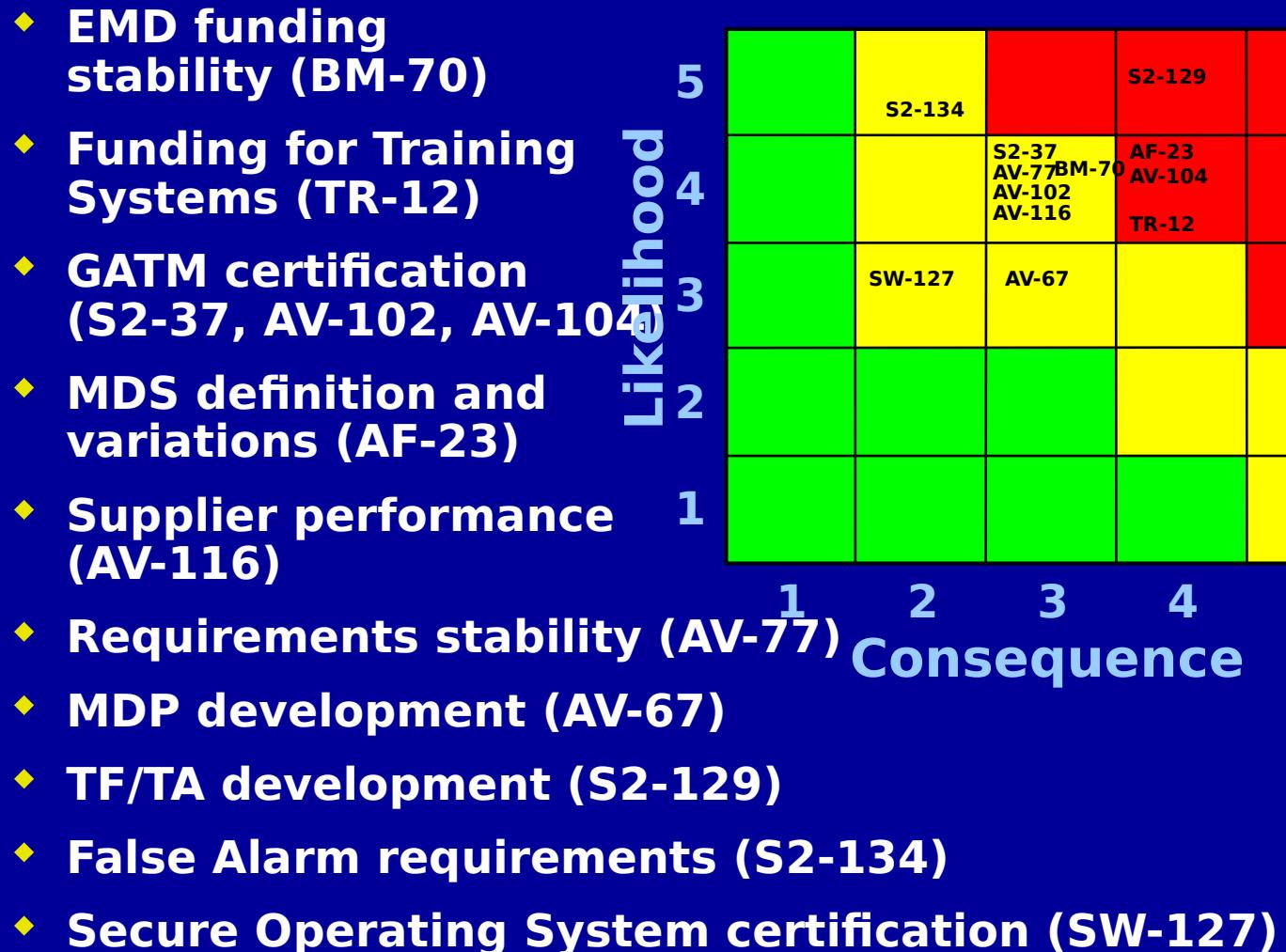
Program Overview





Program Overview

C-130 AMP Top-Level Risks from PMR Meeting March 18, 2003

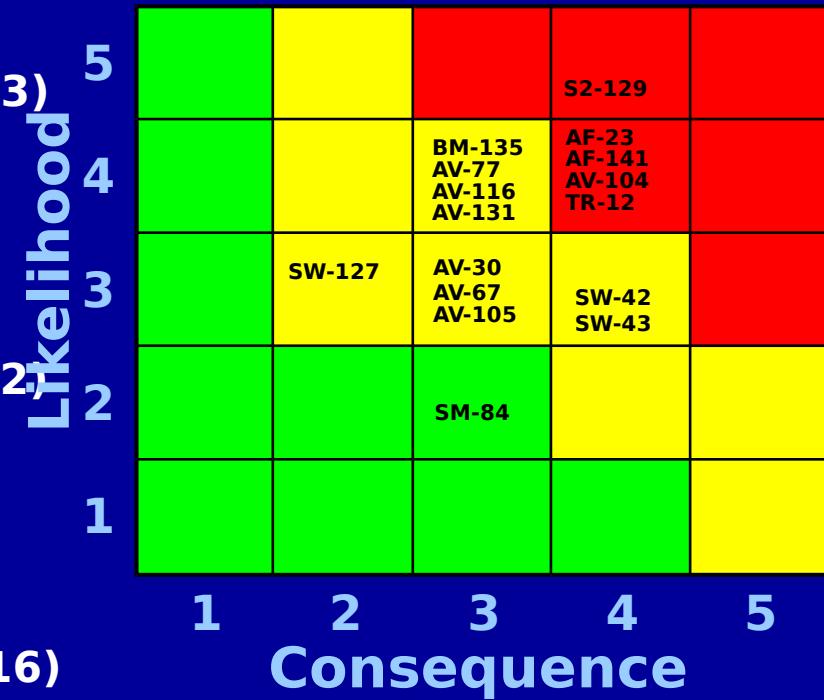




C-130 AMP Top-Level Risks from Risk Review Meeting March 20, 2003

Program Overview

- ♦ **TF/TA Development (S2-129)**
- ♦ **MDS Definition and Variations (AF-23)**
- ♦ **ECS Performance (AF-141)**
- ♦ **GATM Certification (AV-105, AV-104)**
- ♦ **Funding for Training Systems (TR-12)**
- ♦ **EMD Funding Stability (BM-135)**
- ♦ **Requirements Stability (AV-77)**
- ♦ **Supplier Performance (SM-84, AV-116)**
- ♦ **MDP Development /Software Integration (AV-67, SW-42, SW-43, AV-131)**
- ♦ **Secure Operating System Certification (SW-127)**
- ♦ **RF Interoperability (AV-30)**



Based on
AFRC Input



C-130 Avionics Modernization Program Challenges

- ◆ **Perform To Plan**
 - Meet Expenditures
 - EAC Pressures
- ◆ **Program Morale**
- ◆ **Manage Key Risks**
 - MDP Development
 - Radar TF/TA
 - Stable Program Funding
- ◆ **Manage Critical Path**
 - Software (610 Hooks still not addressed)
 - Suppliers
 - Stable Requirements

AFRC View -

- Cost Growth
- Funding Cuts
- Rqmts flux
- Arch flux

No Baseline



Issues

Program Overview



- ♦ **Capturing the “moving” C-130 configuration**
 - **TOs, TCTOs, 1067s**
 - **Modifications approved without 1067s**
 - **Developing “baseline” database**
(April 2000 Baseline Freeze)
 - **Issues to be addressed at quarterly Modification Management Meetings (MMM)**
- ♦ **Strengthen communication**
 - **Across IPTs**
 - **Issue integration**
 - **Product exchanges**
 - **Across locations**
 - **Information sharing**

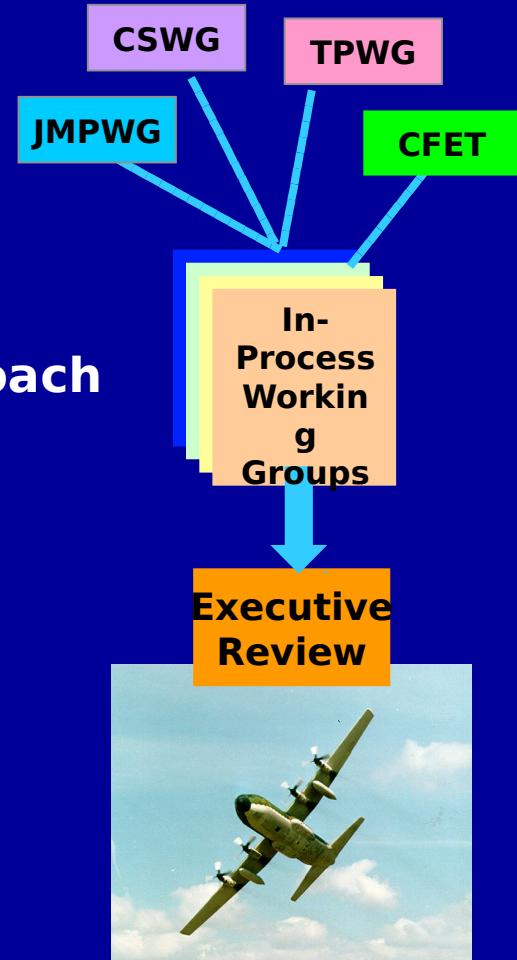


Program Overview



Incremental Design Reviews

- ♦ **Incremental Design Review Process**
 - In-process Working Groups
 - IPT focus
 - Informal working group approach
 - Pre-established entrance and exit criteria
 - iSSWG/iPDWG/iCDWG
 - Executive reviews
 - Summary of In-process Working Group accomplishments
- ♦ **TRRs scheduled for incremental capability enhancements**





Program Overview

C-130 Avionics Modernization Program Upcoming Events



Event	Date
♦ Software Integration Working Group (SIWG)	Apr 03
♦ SIF Software iPDWG	May 03
♦ Replan ECP Definitization	Jun 03 <i>(Have not yet occurred)</i>
♦ SOF Acceleration UCA	Jun 03
♦ Test Planning Working Group (TPWG)	Jun 03
♦ Core iSSWG	Aug 03
♦ Core Hardware iPDWG	Nov 03

♦ PDR (H/W) (Important Milestone to watch)



Impacts to AFRC

Program Overview

- ◆ **Program Management Issues**
 - **Lack of Program Baseline (Schedule & Funding)**
 - Concurrency evident in new schedule
 - **SOF Acceleration/Priority (MC-130E availability)**
- ◆ **MDS Variations**
 - **Tail number differences**
 - **Duration of mods (down-time)**
- ◆ **ECS Issues**
- ◆ **Software and System Integration**
 - **New MDP architecture for SOF/CAAP**
- ◆ **Training Planning/Funding Lagging (AMC Training Way Ahead)**
 - **Won't address Type 1 Training until FY04**
 - **Aircrew training systems not addressed until FY05**

C-130 Avionics Modernization Program



Backup Charts



Previous Cockpit Layout



Current Cockpit Layout



Program Scope - C-130 AMP Cockpit

Program Overview

Radar Replacement

Dual GPS (RAIM, FDE, and NAVWAR Compliant)

N1/C-12 Compass Replacement

New Central Air Data Computer

New Cockpit Displays and Layout

- Multifunction Displays
- Head-Up Displays

Pitot Static System Upgrade

NVIS

Terrain Avoidance and Warning System With Digital Map



Traffic Collision Avoidance System (TCAS) With Mode S

AC and DC Electrical System Upgrade

Flight Management System (FMS)
SCNS Replacement
Dual Autopilot/Flight Director

Digital Flight Data Recorder

New Radios with:

- Data Modem
- Intercom

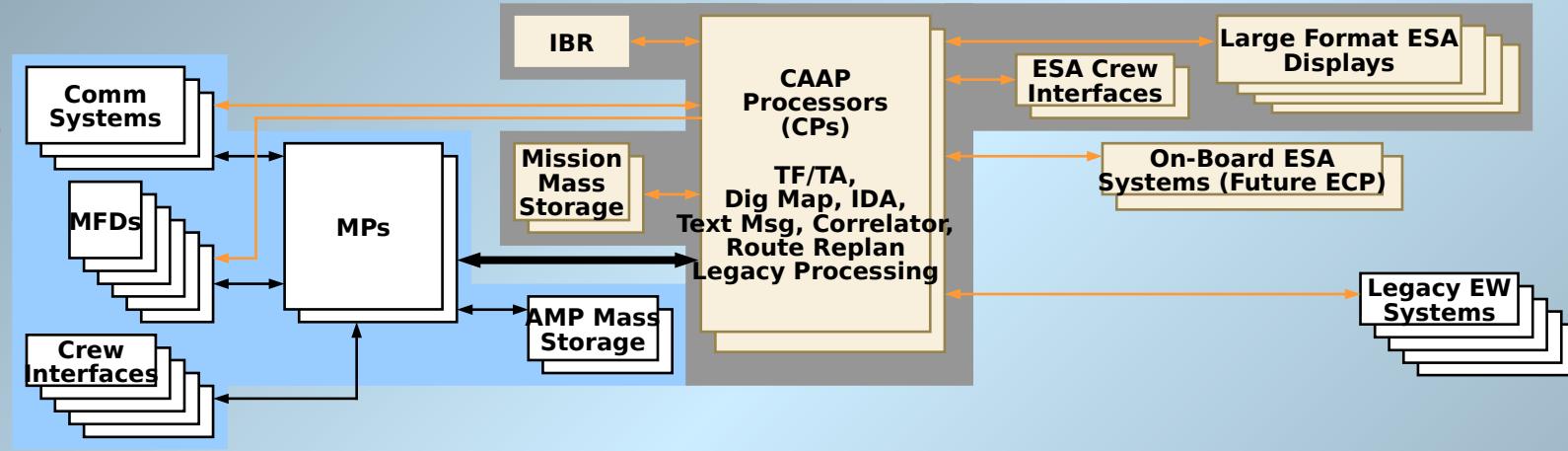
Integrated Defensive Systems
ALE/AAR-47 and ALR-69



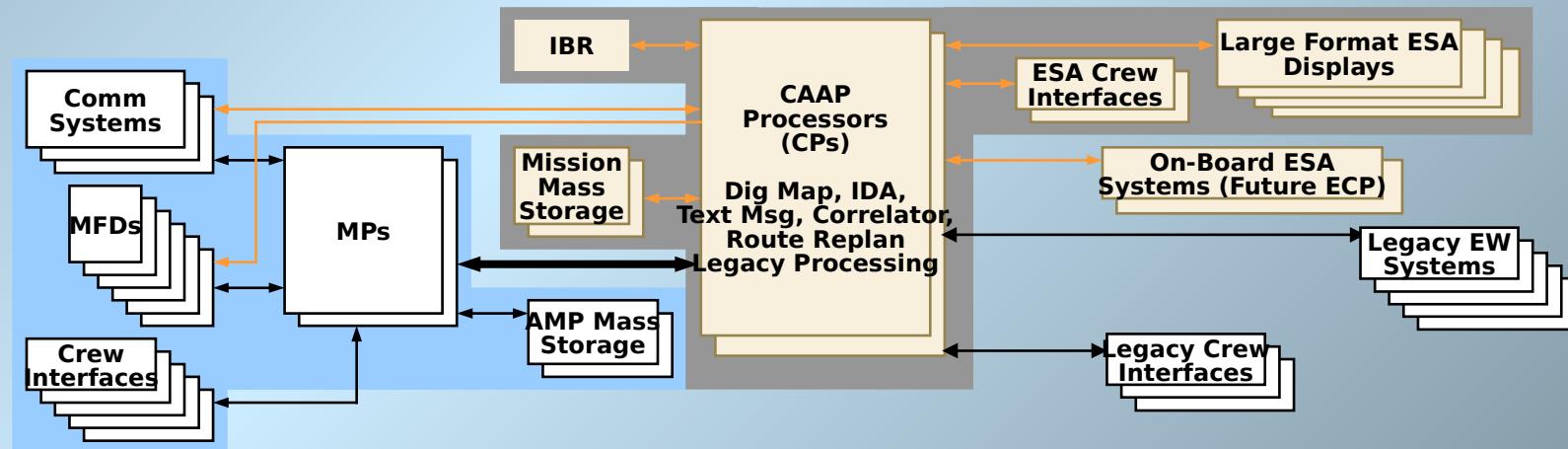
Option 2A Architectures Talons and Gunships

Program Overview

CT1 and CT2 plus Other AFSOC Configuration



GU and GH Configuration



Note that CAAP processor and associated systems can be installed in advance of AMP upgrade in CT and GU/H

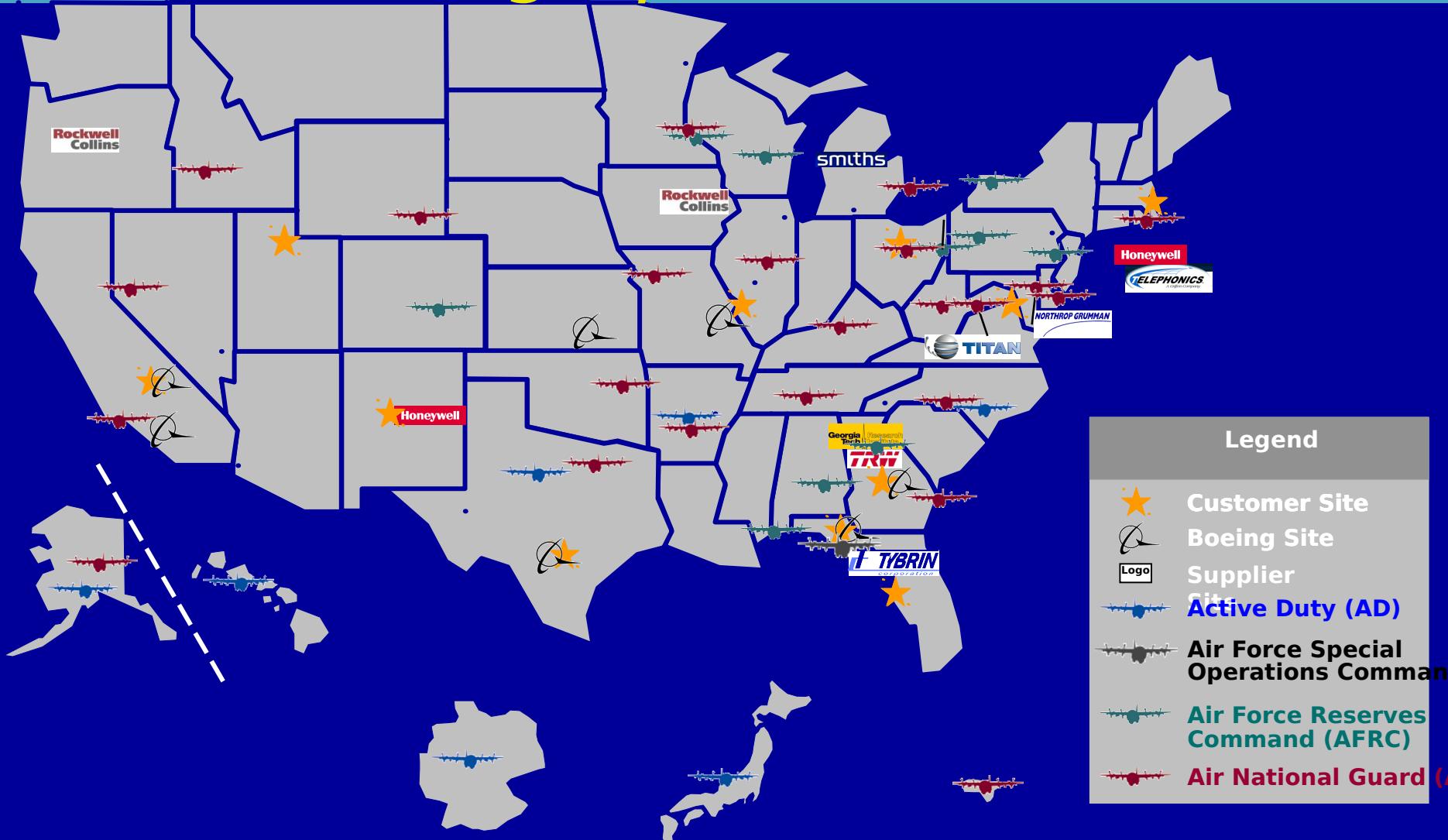
Assumes large format displays upgrade concurrent with CAAP processor



C-130 Avionics Modernization Program

Demographics

Program Overview





Program Overview

C-130 AMP Program-Level Risk General Risk Information - Open Risk 13 Title: Aircraft Discrepancies

Description: Aircraft Discrepancies that will need dispositions but are unrelated to the AMP upgrade can delay the completion of the kit installation and or the DT&E test program.

CAUSE: Historical data supports that due to this aging fleet and variation in MDS's the potential for problems regarding the airframe structure, aircraft system and weapons systems is high.

AFRC asks the question - How do you plan to deal with this?

- Combined Govt and Boeing answer is 500 hrs of over and above labor included for each tail**